Draft
Environmental Impact Report/ Environmental Assessment

State Route 138 Widening Project From Avenue T to State Route 18 Junction Through the Communities of Littlerock, Pearblossom, Llano and the City of Palmdale

SCH Number: 1998091007

Caltrans

District 7 • 120 South Spring Street • Los Angeles, California

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1.0 Purpose and Need

1.1 Purpose of the Project

State Route 138 is regarded as an urban Principal Arterial (for the High Desert Corridor connection) between State Route 14 (Antelope Valley Freeway, PM 43.42, KP 69.88) in Palmdale and the Pearblossom Highway at Avenue T, (PM 51.41, KP 82.7). From Avenue T to the junction with State Route 18 (PM 69.4, KP 111.69) State Route 138 is a 2 lane undivided rural arterial highway with the exception in the areas between 60th and 75th Streets and between 106th and 116th Street East where it becomes a 4 lane highway for a short distance. State Route 138 does not have current standard drainage facilities. See Figures 1 and 2. The proposed project is intended to achieve the following goals:

- Improve safety.
- Facilitate the efficient flow of goods and services through this area.
- Conform to state, regional, and local plans and policies.

This section describes the existing operational deficiencies, projected travel demands in the State Route 138 corridor area, and other considerations that have created the need for the proposed project.

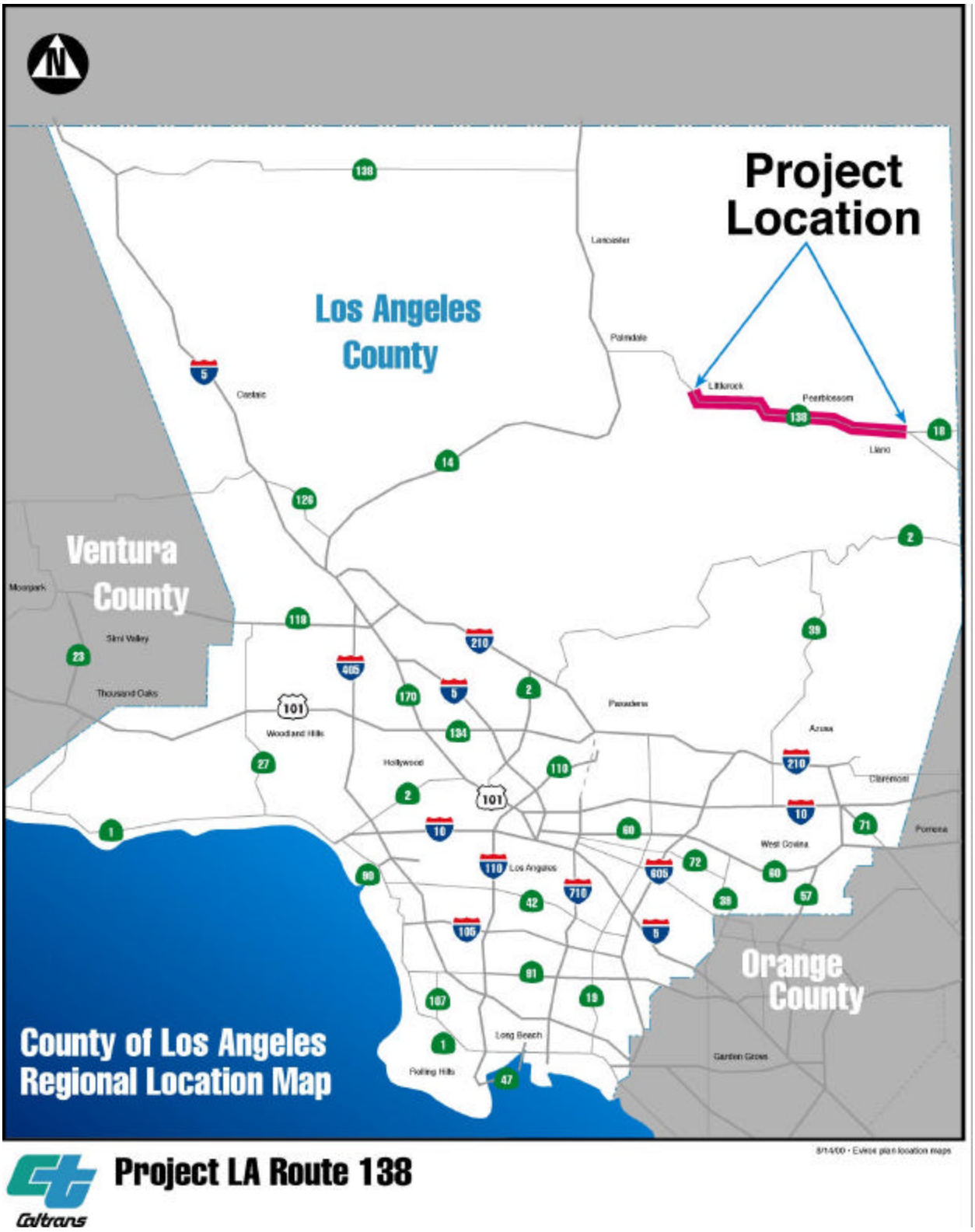
1.2 Need for the Project

The existing section of State Route 138 between Avenue T (PM 51.4, KP 82.7) and the junction of State Route 138/18 (PM 69.4, KP 111.69) consists of two12-foot (3.6 m) mixed flow lanes, one in each direction, with a broken center line in some areas to allow vehicles to pass slow moving traffic. The paved right shoulder is 5 ft (1.5 m) to 8 ft (2.4 m) wide. Beyond the shoulder, swales have been graded to provide drainage along the highway. Vertical grades through the entire route are less than 3 percent except between Big Rock Wash (PM 63.0, KP 101.37) and the junction of State Route 138/18 (PM 69.4, KP 111.69) where swales are less than 3 percent to allow floodwater to cross the roadway. There are a several pockets for left turns. The California Aqueduct crosses State Route 138 at two locations, under the California Aqueduct Bridge (Br# 53-2098) (PM 56.17, KP 90.3), and underground at approximately 116th Street (PM 58.8, KP 94.51).

1.2.1 Capacity Issues

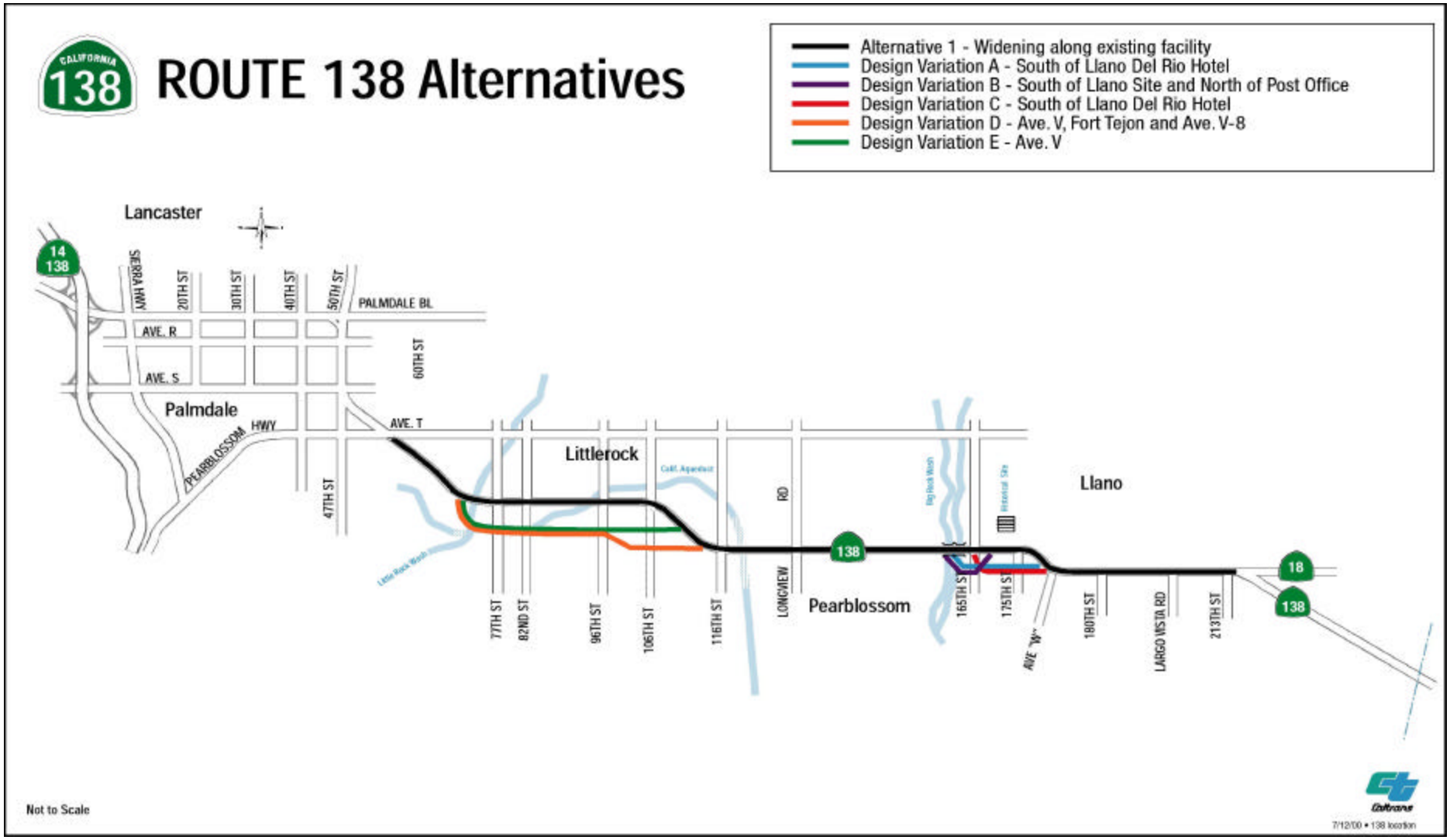
Economic and population growth in the Antelope Valley has rapidly accelerated in the past decade. Southern California Association of Governments (SCAG) predicts high growth rates (approximately 5% per year) for the Palmdale area with the presumption that aerospace industry activity will increase. There has been extensive growth in population, housing, and employment.

State Route 138 carries heavy vehicle traffic including a substantial percentage of trucks. This route is being used increasingly as a by-pass for recreation vehicles and heavy trucks, coming from the north and going to Las Vegas, Barstow, Victorville, San Bernardino County, and Riverside County, to avoid the congestion of the Los Angeles metropolitan area.



Source: Caltrans District 7

FIGURE 1 REGIONAL MAP



Source: Caltrans District 7

FIGURE 2 LOCATION MAP

The ability of a highway to accommodate traffic is typically measured in terms of level of service (LOS). Based on the ratio of traffic volume to the design capacity of the facility, LOS is expressed as a range from LOS A (free traffic flow with low volumes and high speeds) to LOS F (traffic volumes exceed capacity and results in forced flow operations at low speed). See Table 2 and Figure 3.

Table 2 Level of Service Criteria

Level of Service	Description
A	Free flow conditions. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds; high maneuverability.
B	Stable flow, but the presence of others in the traffic stream begins to be noticeable. Freedom to select desired speeds but a slight decline in maneuverability.
C	Stable flow, but users become affected considerably by interactions with others in the traffic stream. Selection of speed is affected by presence of others; lowered maneuverability
D	High density but stable flow. Speed and freedom to maneuver are severely restricted.
E	Unstable flow. Operating conditions are at or near capacity. All speeds are reduced to a low, relatively uniform value. Queues begin to form and maneuverability extremely difficult.
F	Jammed forced flow conditions.

The Average Daily Traffic (ADT) volumes in 1998 on State Route 138 within the project limits varied from 17,500 (vicinity of Avenue T) to 10,600 vehicles (vicinity of Junction of State Route 18). The highway presently operates at LOS E in the vicinity of Avenue T to 96th Street East and LOS D in the vicinity of 96th Street East to the Junction of State Route 138/18. Table 3 shows the current (1998) and future (2024) level of service. Construction on the highway-widening project is not expected to start until 2004. Therefore traffic projections are calculated 20 years from the year of project construction.

Table 3 Level of Service (LOS) Analysis for Build/No Build Alternative

Location	LOS 1998	LOS 2024 (No Build) 2 lane Highway	LOS 2024 (Build) 4 lane Highway
Avenue T to Little Rock Wash	E	F	B
Little Rock Wash to 96th Street East	E	E	B
96th Street East to Longview Road	D	E	B
Longview Road to 165th Street East	D	F	B
165th Street East to Junction Route 18	D	F	B

Source: Office of Traffic Investigations/Traffic Study 6/2000

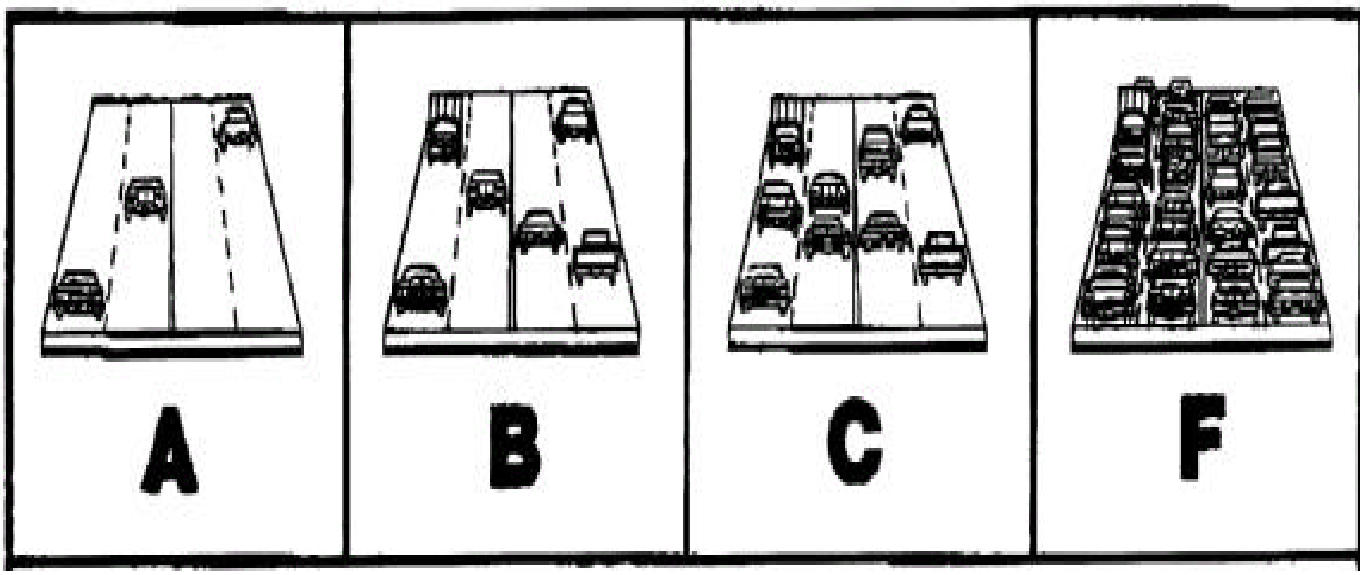


FIGURE 3 TYPICAL LEVEL OF SERVICE FOR EXISTING ROADWAYS

Average Daily Traffic (ADT) for 1998 ranges from a low of 6,900 vehicles near the junction of State Route 18 East to a high of 18,300 vehicles near Avenue T, with peak hour traffic of 1,650 and 1,600 vehicles (both directions) respectively as shown in Table 4, State Route 138 Present Traffic Volumes.

State Route 138 has a high percentage of truck traffic. As shown in Table 4, State Route 138 1998 Traffic Volumes indicates the percentage of trucks is 15.2% in the vicinity of Avenue T and 4.7% near the junction of State Route 138/18.

Table 4 1998 Traffic Volumes

Locations	West Peak Hr	ADT	East Peak Hr	ADT	Truck Percentage W/E
Avenue T	1,650	18,300	1,600	17,500	15.2/14.0
Little Rock Wash	1,350	15,000	1,350	15,000	10.7
Little Rock, 96th St. East	1,350	15,000	1,250	13,700	-
Pearblossom, Longview Road	1,200	13,400	1,100	12,300	-
Llano, 165th St. East	1,100	11,900	1,150	12,600	-
Junction Route 18 East	960	10,600	620	6,900	6.0/4.7

Source: Caltrans District 7 Traffic Operations 1998

The Los Angeles Regional Transportation Study (LARTS) traffic projections for the year 2024 (Table 5) range from a maximum of 33,800 ADT between Largo Vista Road and State Route 18/138 junction to a low of 15,700 ADT from Little Rock Wash to 90th St East. The area between Largo Vista Road and State Route 18/138 Junction has a peak AM traffic projection of 2,700 vehicles and a peak PM traffic of 2,850 vehicles. The ideal capacity for smooth flow of traffic for a 2-lane conventional highway is approximately 1,200 vehicles per hour per lane. This data shows that State Route 138 should be upgraded to a 4-lane conventional highway so that Level of Service (LOS) C can be achieved as illustrated by Table 3 Level of Service (LOS) Analysis for Build/No Build Alternative.

The existing Level of Service (LOS) for State Route 138 between Avenue T and the junction of State Route 138/18 is D/E. It is expected that by adding 2 lanes to make it a 4-lane conventional highway, the LOS will be maintained at LOS B, which would consist of a stable flow of traffic through 2024.

Table 5 Future (2024) Traffic Volumes

Location	East		ADT	West		ADT
	AM	PM		AM	PM	
Avenue T to Little Rock Wash	1,725	1,625	24,900	1,500	2,000	25,600
Little Rock Wash to 90th St East	1,200	1,325	15,700	1,150	1,400	16,700
90th St East to 106th St East	1,175	1,250	16,800	1,125	1,325	16,500
106th St East to 136th St East	1,400	1,325	18,900	1,250	1,625	19,800
136th St East to 165th St East	1,650	1,675	22,900	1,575	1,950	23,900
165th St East to Largo Vista Rd	2,200	1,950	27,800	1,850	2,245	29,000
Largo Vista Rd to the State Route 18/138 Junction	2,700	2,375	33,800	2,150	2,850	34,000

Source: Caltrans District 7 Traffic Projections

1.2.2 Safety Problems

This existing stretch of State Route 138 has one lane in each direction with passing lanes in only two areas (between 60th and 75th Streets and between 106th and 116th Street East).

Analysis from the Caltrans' Traffic Accident Surveillance and Analysis System (TASAS) for the period from April 1, 1994 to March 31, 1999 indicated the actual accident rate is .81/million vehicle miles traveled (mvm) within the project limits, which is lower than the statewide average of 1.02 /mvm. However, the actual fatality rate is 0.049/mvm, which is higher than the statewide average of 0.038/mvm. A more detailed analysis of the accident summary reveals that there were 25 fatalities and 354 injured within this same period within the project limits (Avenue T to the Junction State Route 138/18).

State Route 138 has been identified as having a high number of cross-centerline accidents. The Caltrans 2-3 lane cross-centerline accident monitoring program has identified a pattern of cross-centerline accidents between 96th Street East to approximately the junction of State Route 138/18. For the 5-year analysis period of 1994-1998 there were 10 fatal cross-centerline accidents between 96th Street East and the Junction of the 138/18.

The high truck volumes along with their slower speeds create a queue along the 2-lane section because of insufficient passing opportunities. The majority of the accidents indicate that the types of collision were broadside (21.5%), rear end (28.7%), and hit object (19.6%). See Table 6 for detailed examinations of accidents.

In response to community concern over accident history Caltrans District 7 (which consists of Los Angeles and Ventura County) in association with other agencies formed a Highway 138 Safety Corridor Task Force. See section 2.7.

Table 6 Accident History
4/1/94 through 3/31/1999 (60 Months)

	Code	Number	Percent
Primary Collision Factor			
	Influence of Alcohol	31	8.3
	Failure to Yield	49	13.1
	Improper Turn	74	19.8
	Speeding	105	28.2
	Other Violations	113	30.6
Type of Collision			
	Head-on	28	7.5
	Sideswipe	42	11.2
	Rear-end	107	28.7
	Broadside	80	21.5
	Hit Object	73	19.6
	Overturn	24	6.4
	Other	18	4.8

Source: Caltrans District 7 TASAS April 2000

Table 7 Accident Summary
04/01/94 through 3/31/99 (60 Months)

Accident Period	Total	Fatalities (F)	Injury (I)	F+I	Multi Vehicle	Persons Killed	Injured
04/01/94 to 03/31/95	64	1	31	32	48	1	54
04/01/95 to 03/31/96	70	7	33	40	51	10	73
04/01/96 to 03/31/97	76	3	37	40	63	3	88
04/01/97 to 03/31/98	70	4	33	37	50	4	69
04/01/98 to 03/31/99	88	5	34	39	66	7	70
04/01/94 to 03/31/99	368	20	168	188	278	25	354

Source: Caltrans District 7 TASAS April 2000

Table 8 Accident Comparison to the Statewide Average
04/01/94 through 3/31/99 (60 Months)

Accident Period	Accident Fatalities	Rate F+I	Actual Total	State Avg. Fatalities	State Avg. F+I	State Avg. Total
04/01/94 to 03/31/95	.011	.36	.72	.039	.51	.98
04/01/95 to 03/31/96	.079	.45	.79	.039	.51	.98
04/01/96 to 03/31/97	.035	.46	.88	.039	.51	.98
04/01/97 to 03/31/98	.046	.43	.81	.039	.51	.98
04/01/98 to 03/31/99	.058	.45	1.02	.039	.51	.98
04/01/94 to 03/31/99	.046	.43	.84	.039	.51	.98

Source: Caltrans District 7 TASAS April 2000

1.2.3 Operational Deficiencies

The existing pavement profile east of the community of Pearblossom is a rolling profile with drastically deep depressions originally designed to accommodate the passage of flash drainage flows. These depressions in the pavement have the effect of diminishing the stopping and passing sight distance available to the user. It should be noted that the sight distance is one of the 13 mandatory controlling design criteria elements required in the design of a highway facility.

The accidents associated with wet pavement conditions are relatively high, about 9 percent of the total accidents can be attributed to wet conditions. If drainage conditions remain the same and drainage is allowed to flow over the roadway, it can be expected that these types of accidents will increase as result of the additional traffic lanes, increase traffic volumes, and higher speeds.

The present condition of the shoulders consists of the earth berms along side the roadway in the driver's recovery area this reduces the recovery areas for errant drivers and poses a potential safety hazard. Also the existing facility has curves in the project areas that are not up to the latest design standards at the following locations:

- 72nd Street East
- 116th Street
- 175th Street East
- Avenue W
- State Route 138/18 Junction

An Engineering and Traffic survey was completed in 1997 in which speed measurements were obtained. The observed critical speeds were generally around 65 to 70 miles per hour (mph) outside developed areas, with 45 to 60 mph speeds in the community of Littlerock and 50-55 mph speeds in the community of Pearblossom. These curves do not provide adequate stopping sight distance for the speeds that motorists drive. The State Route 138/18 junction is on a curve, which has a left turn pocket onto State Route 18. The inadequate space for vehicles making a left hand turn on to State Route 18 from State Route 138 has the potential to create a queuing effect on the highway that backs up the traffic and poses the potential for rear end collisions.

1.2.4 Structural Deficiencies

Big Rock Wash Bridge (Bridge #53-313 and Bridge #53-314)

The existing bridges do not have sufficient waterway to convey a 100-year storm. Also, the existing bridge is not wide enough to carry the four lanes that are proposed for State Route 138. Big Rock Wash Bridge is in an area that has a rolling profile and has a restricted sight distance.

The Big Rock Wash Bridges are concrete bridges that were constructed in 1948 using the supports from earlier timber bridges. Bridge #53-313 is a two span continuous slab bridge that is 40 ft (12.2 m) long and bridge #53-314 is a three span continuous slab bridge that is 60 ft (18.2 m) long. Each bridge is presently 32.8 ft (10.0 m) wide. The new bridge would replace the two older bridges with one continuous bridge spanning Big Rock Wash.

The Q100 flow (100 year flood) for the Big Rock Wash Bridge was calculated by Caltrans District 7 Hydraulics to be 566 cubic meters per second (cms) (20,000 cubic feet per second (cfs)). Based on these flows the bridges will be overtopped by a 100-year storm event. The channels and bridges currently have sufficient capacity for a 20-year flood. If the channels were allowed to aggrade to their natural state the bridge would only be able to handle a 10-year flood.

California Aqueduct (Bridge No. 53-2098)

It is proposed to widen both sides of the California Aqueduct Bridge at 96th Street East to accommodate four lanes and keep within the same alignment to bring the bridge up to current standards and to accommodate equestrian users.

Little Rock Wash Bridge (Bridge No. 53-0303R and Bridge No. 53-0303L)

Little Rock Wash Bridge consists of two bridges (53-0303R and 53-0303L). The westbound bridge (53-0303L) would be replaced. As a result the eastbound bridge (53-0303R) would be widened to the north to accommodate the 4-lane highway and bring the bridge up to current standard.

1.3 Summary

The proposed improvements of State Route 138 were planned to correct existing operational deficiencies, accommodate projected travel demands in the State Route 138 corridor area and achieve planning consistency. A transportation project is needed in this area to improve the safety characteristics, which would reduce the number of accidents. Adding an additional lane in both directions would allow traffic to flow at an acceptable Level of Service. Also the project would eliminate the need for fast moving vehicles to crossover the median to pass slow moving traffic thereby reducing the number of cross-centerline accidents. Due to the predicted increase in travel volumes, the existing facility will not be able to accommodate the future projected volumes adequately. In summary improvements to the existing State Route 138 facility are needed for the following reasons:

- Improve safety.
- Facilitate the efficient flow of goods and services through this area.
- Conform to state, regional, and local plans and policies.
- Vehicle miles of delay will continue to increase and vehicle hours of travel will increase from current conditions.
- Congestion on arterial roadways intersecting to State Route 138 will increase substantially from the 1999 conditions.
- Accident rates will continue to increase due to operational deficiencies.
- Regional emissions will increase due to the increase of vehicle hours of travel.